What is claimed is:

1. A method comprising:

detecting, using magnetic resonance imaging, regional neural activity in a subject undergoing magnetic resonance imaging based on transient magnetic fields induced by the regional neural activity; and

spatially and temporally localizing the regional neural activity using at least a portion of the detected transient magnetic fields.

2. The method of claim 1, wherein the magnetic resonance imaging comprises applying an asymmetric pulse sequence to the subject.

3. The method of claim 2, wherein the asymmetric pulse sequence comprises a gradient-echo echo-planar image pulse sequence.

4. The method of claim 3, wherein the asymmetric pulse sequence comprises a repetition time of between approximately 40 and 10,000 milliseconds, an echo time of between approximately 10 and 200 milliseconds, and a flip angle of between approximately 10 and 180 degrees.

5. The method of claim 1, wherein the detecting comprises measuring magnetic resonance imaging signal magnitude changes.

6. The method of claim 1, further comprising stimulating the subject with a hemodynamically neutral stimulation.

7. The method of claim 6, wherein the hemodynamically neutral stimulation comprises providing rapid stimuli to the subject.

8. The method of claim 7, further comprising causing the subject to perform a motor activity in response to the rapid stimuli.

9. The method of claim 1, further comprising performing a second nervous system measurement technique to conjoin with the magnetic resonance imaging.

10. The method of claim 9, wherein the second nervous system measurement technique measures at least one of cerebral hemodynamic, metabolic, and neural activity.

11. The method of claim 1, further comprising detecting intrinsic rhythms of a nervous system of the subject using the regional neural activity.

12. The method of claim 1, further comprising diagnosing a disorder of a nervous system of the subject using the regional neural activity.

13. The method of claim 1, further comprising analyzing a drug effect on a nervous system of the subject using the regional neural activity.

14. A method comprising:

performing magnetic resonance imaging on a subject; and

directly mapping electromagnetic activity of the subject via the magnetic resonance imaging.

15. The method of claim 14, wherein the magnetic resonance imaging comprises applying an asymmetric pulse sequence to the subject.

16. The method of claim 15, wherein the asymmetric pulse sequence comprises a gradient-echo echo-planar image pulse sequence.

17. The method of claim 14, further comprising measuring magnetic resonance imaging signal magnitude changes.

18. The method of claim 14, further comprising stimulating the subject with a hemodynamically neutral stimulation.

19. The method of claim 14, further comprising performing a second nervous system measurement technique to conjoin with the magnetic resonance imaging.

20. The method of claim 14, further comprising detecting intrinsic rhythms of a nervous system of the subject via the electromagnetic activity.

21. The method of claim 14, further comprising diagnosing a disorder of a nervous system of the subject based on the electromagnetic activity.

22. The method of claim 14, further comprising measuring latency of the electromagnetic activity.

23. An article comprising a computer readable medium containing instructions that if executed, enable a system to:

detect, using magnetic resonance imaging, regional neural activity in a subject undergoing magnetic resonance imaging based on transient magnetic fields induced by the regional neural activity; and

spatially and temporally localize the regional neural activity using at least a portion of the detected transient magnetic fields.

24. The article of claim 23, further comprising instructions that if executed enable the system to apply an asymmetric pulse sequence to the subject.

25. The article of claim 23, further comprising instructions that if executed enable the system to measure magnetic resonance imaging signal magnitude changes.

26. A system comprising:

a magnetic resonance imaging scanner having a plurality of magnets to generate a magnetic field around a subject; and

a controller coupled to the magnetic resonance imaging scanner to detect a magnitude of magnetic resonance signals representing a neuronal magnetic field.

27. The system of claim 26, wherein the plurality of magnets comprises a main magnet and a gradient magnet.

28. The system of claim 26, wherein the controller is further adapted to directly map electromagnetic activity of the subject via the magnitude of the magnetic resonance signals.

29. The system of claim 28, wherein the map comprises a spatial and temporal localization of neuronal activity of the subject.

30. The system of claim 26, further comprising a second controller coupled to the magnetic resonance imaging scanner to provide an asymmetric pulse sequence to the magnetic resonance imaging scanner.

31. The system of claim 26, further comprising a stimulus generator to provide a stimulus to the subject.

32. The system of claim 31, further comprising a measurement device to measure a response of the subject to the stimulus.

33. The system of claim 28, wherein the controller is adapted to measure latency of the electromagnetic activity.

34. An article comprising a computer readable medium containing instructions that if executed, enable a system to:

receive magnitude resonance signals from a subject of a magnetic resonance imaging system; and

process the magnitude resonance signals to directly map neuronal activity of the subject.

35. The article of claim 34, further comprising instructions that if executed enable the system to localize the neuronal activity spatially and temporally.

36. The article of claim 34, further comprising instructions that if executed enable the system to generate an image based on the neuronal activity.